ELECTROMAGNETIC DRIVING DEVICE AND FLOW RATE CONTROLLING APPARATUS EMPLOYING THE SAME DRIVING DEVICE

ABSTRACT OF THE DISCLOSURE

Non-magnetic layers are formed on an inner circumferential wall of a housing portion 13 and an outer circumferential wall of a plunger 17, respectively. Assuming that the thickness of the non-magnetic layer of the housing portion is t0, the thickness of the non-magnetic layer of the plunger is t1, a magnetic gap formed in a radial direction between respective magnetic materials of the housing portion and the plunger which excludes the non-magnetic layers is d0, and an air gap formed in a radial direction between the non-magnetic layers when the plunger does not deviate from but remains coaxial with the housing portion is d1, the thickness are set so as to satisfy $40\mu m \leqq t0+t1 \leqq 80\mu m$, $d0 \fallingdotseq 100\mu m$. In addition, it is set such that the attracting portion becomes saturated magnetically when the value of electric current that is supplied to a coil increases to reach a predetermined value which falls between 40% or larger and 60% of smaller of a maximum value of the electric current.